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An Essay
on Diabetes Mellitus presented
to the Revd. John McDowell LLD Provost
& the Trustees & Medical Faculty
of the University
of Pennsylvania
by
William Aspinwall
of Massachusetts —

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An attempt has been made in this essay, to investigate, the proximate cause, of Diabetes Mellitus, only. Other kinds as Diabetes Insipidus, Diabetes Arthriticus, Diabetes Hystericus, &c are considered merely as symptomatic & will terminate with the cure of the primary disease. The belief, that Diabetes Mellitus is dependant on & connected with, an affection of the liver, was received from the Lectures of the Professor of the Institutes & Practice of Medicine. This opinion was more confirmed, when it was found, that the lungs, in which, the chyle, after being taken into the circulation, is supposed to be changed into red blood, were always in a sound state, in diabetic patients. The kidnies have been supposed to be the seat of Diabetes. Although they have exhibited a flaccid appearance, generally on dissection, yet this as Dr Cullen says, is rather the effects, than the cause of morbid action in them. The facility with which, they have recovered their healthy action, when other symptoms have been re-

moved, is opposed to the supposition.

This performance is very imperfect from its brevity, from the nature of the subject, & from every thing besides which could render it so. With its many imperfections however, to the candid examination of Trustees & Medical Professors of this University, it is respectfully submitted.

The symptoms of Diabetes Mellitus, are a superabundant discharge of water; of a light straw color sweetish to the taste & ~~generally~~ sometimes of a whey-like appearance. The appetite is changeable, but for the most part voracious. Thirst excessive & the quantity of liquids taken into the stomach, frequently exceeding ~~the~~ several gallons in the twenty four hours. The skin is dry. The pulse is more frequent & feeble than ~~natural~~ in health. Emaciation. Pain in the kidneys. Dissections have

shewn them to be in a flaccid state & the vessels preternaturally enlarged especially those of the cryptae. This is not always the case, for sometimes only ~~only~~ one, at other times neither have exhibited any morbid appearance on dissection. Costiveness is an attendant symptom. The stools of a greenish color, without any unpleasant smell. The color of the faeces depends on the acidity of the gastric juice. The want of smell in the discharges from the rectum, is without doubt, owing to a deficiency of bile. The disease comes slowly & almost imperceptibly, without any previous disorder.

The remote causes of Diabetes Mellitus are supposed to be intemperance in eating & drinking. The two cases described by Dr Rollo are evidences of this. Other causes have been assigned, as great fatigue, exposure to

heat & cold; acid drinks. The drinking of large quantities of mineral waters. Too frequent use of diuretic medicines. It has followed intermittent fevers. These may have been the remote causes of the other kinds of Diabetes; but of Diabetes Mellitus, other, than intemperance in eating & drinking has ~~has~~ seldom been the cause.

The greatest difficulty, that has occurred to writers on this disease, has been to assign a proximate cause. Dr Darwins opinion was, that the chyle is carried immediately to the bladder without entering the circulation. In proof of this, he says, when a large quantity of spirituous is drunk, it is, by the inverted motion of the urinary absorbents, which anastomose with the lacteals, of the intestines, conveyed into the bladder. By these being frequently inverted, the chyle by habit, ~~is~~ passes ~~into the~~ directly to the bladder. Experiments, that have been since made, disprove of this direct communication.

between the stomach & bladder. The blood also which has been taken from diabetic patients has had not only a wheyish & sweetish, but on standing several days, exhibited a caseous appearance. This proves, that the chyle is, as usual taken up by the lacteals, & there is no reason for supposing their motions inverted. It is a well known fact, that, not only, putting the hands into water, but even the sight of it, will frequently excite a desire to empty the bladder.

Dr Cullen says, the proximate cause of this disease being so little known or ascertained, he cannot propose any rational method of cure. The proximate cause however he supposes to consist in some fault of the assimilatory powers or those employed in converting alimentary matters, into the proper animal fluids. He has given no cause for this defect in the assimilatory organs; or pointed out any of the viscera, as being particularly disturb-

ed in their healthy functions. Dr Dobson & Dr Rollo entertain the same opinion almost with Dr Cullen.

The proximate cause of Diabetes Mellitus, is, in this essay supposed to be, an affection of liver. This consists in a suspension of its secretory powers; whether arising from torpor, paralysis or any other cause. Although dissections have not shewn the liver, to be particularly affected; yet how seldom is it, that there is any morbid appearance after death, in most diseases. Nor in Diabetes is it necessary. Will a paralytic limb after death, differ in appearance from a healthy one?

This opinion, of the proximate cause of Diabetes Mellitus, as has been acknowledged, was suggested by Dr Rush. When speaking of the liver & its functions, he says, "that it is designed to receive

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blood from every part of the body, in order, to subject that part of it, which had not been completely animalized or divested of its chylous properties, to a secretory process & afterwards to pour out the product of this secretion, mixed with the liquor of the pancreas, into the duodenum to be absorbed or otherwise taken up by the lacteals & conveyed with the chyle, from the stomach into the bloodvessels, in order to be completely converted into red blood, for the purpose of serving the various & important uses, for which that fluid is intended in the human body" The product of this secretion is what the Professor calls hepatic bile. It is says Dr Boerhaave "mild sweetish & watery" to the taste. It becomes bitter only by stagnation in the Gall Bladder. Does not a defect, in the functions of the liver, satisfactorily account for the want of a proper assimilation of alimentary into the animal

fluids spoken of by Dr Cullen. That the liver is the viscus principally at fault in Diabetes Mellitus is infered,

1st That it occurs in persons intemperate in eating & drinking. The obstructions & enlargement of the liver, the effects of intemperance in drinking, are too well known to need any comment. In intemperate eaters it occurs frequently. In such cases, the digestive powers of the stomach are disproportioned to those of the liver. For digestion cannot be supposed to be completed, until the chyle is so changed, as to become a proper fluid for the nourishment of the body. The quantity of chyle, must be in proportion to the quantity of aliment taken into the stomach, provided it be properly digested there. The spices which are added to give a zest to the food of all Epicures, not only promote the flow of the Gastric liquor, but also stimulate the mouth,

of the lacteals to an increased absorption. Hence the liver is excited to a secretion proportionate to the quantity of aliment, received into the stomach. Hence also the increased quantity of bile ~~for~~ in the system.

Altho the liver frequently complains of the hard task imposed on her, by bilious colics, sick headaches &c, she still continues her efforts until, ~~by the~~ unable to relieve herself, she sinks by degrees, under the oppressive burden, & becomes torpid & inactive. If the stomach do not sympathize but continues to call for more aliment & the lacteals to absorb the chyle, as fast as it is formed, the bloodvessels at length become surcharged with chyle. The chyle, from its quantity becomes a stimulus to the heart & arteries, excit-

ing morbid action in them. As the liver is incapable of performing its duty by changing it into bile; the kidnies to relieve the system take on increased action, which constitutes true Diabetes Mellitus.

2d I infer that the ~~The~~ liver is affected in this disease from the deficiency of bile, also from the costiveness & want of smell in the stools. Although Dr Rollo believed the stomach to be the seat of the disease, he says there is "reason to suppose a deficiency of bile from whatever cause it may proceed; for beside the light color of the stools, there is no yellowness of the eyes, or even that high saffron color of the urine, which takes place, when the bile is sufficiently secreted, but prevented from passing into the intestines" —

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From what has been said, as to the proximate cause of Diabetes, the cure will readily be inferred. It must consist, in obviating the saccharine process, in diminishing the morbid-action of the stomach & in restoring the liver to its healthy action.

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